UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

PROJECT INSTRUCTIONS
COEUR D'ALENE EXPERIMENTAL
CONTROL PROJECT
1941

by
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A spray which penetrates the bark and destroys the mountain pine beetle brood beneath has been successfully developed as a method of control in lodgepole pine. The purpose of the Coeur d'Alene experimental control project is to test the practicability of this method in white pine, through the process of an actual control operation. The advantages of this method are obvious. It is not necessary to remove the bark, the danger arising from the use of fire is eliminated, and the work can be conducted under more favorable weather conditions.

The treatment of infested trees with a penetrating spray is not "fool proof" and will require as much or more consideration than other methods now in use. Constant and adequate supervision will be necessary if a standard of work is maintained which will insure the success of the project.

These instructions have been prepared to assist all project officers in the realization of the extent, importance, and execution of their duties. Although an attempt has been made to present these instructions in sufficient detail, there will no doubt be numerous situations which will need be solved by the officers immediately responsible.

PROJECT ORGANIZATION

CAMP

The one camp of this project will be under the direct supervision of a camp foreman, who will be responsible for the execution of all project activities. These duties will include the usual camp administration, keeping of time and production records, as well as the direction of spotting and treating. The woods work will include the location of spray caches at advantageous points, and the maintenance of an adequate supply of spray. To check on the condition of equipment, supplies, etc., is a part of the camp foreman's duties. In brief, he is charged with full responsibility of the work conducted from the camp.

As an assistant to the camp foreman there will be a spotter-checker, who will spend as much time as necessary in checking the work of the two spotting crews. As this phase of the operation will not require the entire time of this checker, he will assist the camp foreman in other administrative duties.

SPOTTING CREWS

To cover the acreage involved in this project, two spotting crews will be required for a maximum period of three weeks. Although the designation of areas, etc., will be the responsibility of the camp foreman, the actual direction of each spotting crew is a function of the chief spotter, who is responsible for the character of the work performed. Each spotting crew will be composed of a chief spotter, a compassman, and four spotters. Detailed instruction for spotting crews are given in a separate mimeographed circular, which is available for distribution to all spotters.

TREATING CREWS

The most efficient treating crew organization is considered as being the smallest self-producing or operating unit that can function by itself. Such a unit will reduce the amount of noneffective time spent in walking to and looking for trees marked by spotters; there will be no lost time on the part of crew members waiting for trees to be cut and treated, and enough spray can be carried on one pack animal to provide for an average day's treating. A three-man organization, including the laborer assigned to the transportation of spray, is considered as the most efficient set-up for this work. Under some circumstances it may be necessary to add a fourth man to crews working in heavy infestation. The man assigned to the transportation of spray is not to be considered as a packer, but as a member of the crew charged with this extra task.

Each treating-crew leader will be responsible for the character of work performed by his crew.

TRANSPORTATION OF SPRAY IN THE FIELD

Spray ready for application will be transported in the woods in 5-gallon "honey cans". These are round, rather heavily constructed cans, with a non-leak, pressure-spring cap. They are carried four to an animal in a specially constructed pack box, from which they can be readily removed.

SPRAY FORMULA

4 parts fuel oil

1 part orthodichlorobenzene

TECHNIQUE OF TREATMENT

In addition to the actual technique of applying the spray there are a number of factors to be considered in connection with this method of control.

1. Trees must be felled, limbed, and the infested portion of the bole cut in multiples of 16-foot log lengths to permit rolling. Trees should not be felled along contours, as when lodged against other trees or stumps they are difficult to turn.
2. Trees should not be felled for any period of time prior to treatment. If the surface of the bark becomes wet from snow or rain, the treatment is ineffective, as the spray will not penetrate wet bark.
3. Treating should not be conducted if boles of trees are wet from rain or snow.
4. Trees must not be felled into deep snow, as this dampens the bark and makes the spray ineffective.
5. Trees should be treated as soon after being felled as possible, always the same day.
6. When feasible trees should be felled north or south to provide for sunlight on both sides of bole.

As this treatment is only effective where the spray is properly applied, a technique must be employed which will accomplish this objective with a minimum of time and materials, with care being exercised to prevent waste. Thick-barked trees require more spray, and it is often necessary

to cover the base of large trees with a second spraying. A second spraying can be applied a minute or two after the first coverage has been made, as the bark absorbs the liquid quite rapidly. Thorough spraying demands that the entire surface of the infested portion of the bole be sprayed until the bark glistens and drops of oil appear on the bark scales. There is little lateral distribution of the spray beneath the bark, so if an area of a few square inches is missed or improperly sprayed, the insects beneath are not destroyed.

After the tree has been prepared for treatment, the treater, using a 30-inch brass rod extension and a nozzle which throws a fine fan-shaped spray, walks along the top of the log and sprays the upper arc of its circumference. The width of the strip covered will vary with the diameter of the log being treated, and is governed by the distance that the nozzle is held from the log. By treating only the top of the log, splashing and wasting of spray is avoided, and the force of gravity apparently aids penetration. After the top arc of the log is sprayed it is rolled sufficiently to permit the treatment of another strip. Care must be exercised to prevent the occurrence of unsprayed areas of bark between the strips or behind knots and limbs. A watchword for treaters would be "thorough treatment with no waste of materials".

Although the proposed treating units are considered as being the most efficient set-up for this project, every possible improvement will be made to build the most efficient organization. It is realized that the economical success of this method of treatment rests upon the treating crew man-day output.

In treating the following equipment will be required.

Saws, 5½ foot	Axes, 3½#, D.B.
Single jacks	Canthooks, 4½' handles
Felling wedges	Spray tanks
	Pocket compass for foreman

SERVICE OF SPRAY TRANSPORTATION

The transportation of thousands of gallons of spray into the woods, and to the treating crews as needed, will perhaps prove to be the most difficult task in the use of this method of treatment in white pine. Careful planning will be necessary to make this phase of the project as efficient as possible; however, it should be recognized that its importance warrants adequate transportation facilities.

The spray will be mixed at the time the basic fuel oil is transferred from the tank car to the 50-gallon drums in which the spray is transported to the end of the truck road. If fuel oil is purchased in drums, the mixing will be done at the motor truck road head. Mixing is easily accomplished by placing the required lethal materials in each drum or container before it is filled with fuel oil. At the end of truck transportation the spray is transferred to the 5-gallon containers and carried by pack animals to the camp site and other designated caches. The spray will be stored at these caches in 50-gallon drums. In connection with this service a large percent of the material should be moved into the areas before treating is started, which should be as soon as the spotting has indicated the most advantageous locations for the caches. With an adequate reserve of mixed spray in the field the daily pressure of supplying treating crews will be materially reduced.

It is obvious that the treating crews must be kept supplied with spray and it is believed that this can best be accomplished with a one-pack-animal unit assigned to each crew. The 20 gallons of spray carried by this animal will be sufficient to treat 8 or 10 trees. Reserve caches will be maintained along the main trail and in other areas where considered necessary. Sufficient pack stock must be made available to insure an adequate service of supply to all treating crews.

During the treating period of this project eight pack animals will be required to transport oil to the treating crews. An additional string of eight pack animals will be required to move the oil from the end of the truck road to the field caches. Saddle horses will not be necessary with the treating crew unit of one animal.

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